

Degrees of protection (IP) according to DIN EN IEC 60529

Definition of the degrees of protection according to DIN EN IEC 60529

The levels of protection are indicated by a code made up of two constant letters IP and two characteristic numbers for the degree of protection, e.g. IP54.

Example:

Code IP65

First index: — Protection against contact and ingress of foreign objects.

Second index: — Protection against liquids.

Degree of protection against access and foreign bodies			Degrees of protection for water		
First Index	Designation	Scope of protection	Second Index	Designation	Scope of protection
0	Non-protected	No special protection for persons against direct contact with live or moving parts. No protection of the equipment against ingress of solid foreign objects.	0	Non-protected	No special protection.
1	Protection against large foreign bodies	Protection against accidental contact of large areas with live and internal moving parts, e.g. back of hand, but not protection against deliberate access to the parts. Protection against ingress of solid foreign objects with a diameter greater than 50 mm.	1	Protection against vertically dripping water	Water dripping vertically must cause no damage.
2	Protection against medium-sized foreign bodies	Protection against contact between the finger and live or internal moving parts. Protection against ingress of solid foreign objects with a diameter greater than 12.5 mm.	2	Protection against dripping water (tilted)	Water dripping at an angle of 15° to the vertical from any direction must cause no damage.
3	Protection against small foreign bodies	Protection against contact between live or internal moving parts and tools, wires and the like with a thickness greater than 2.5 mm. Protection against ingress of solid foreign objects with a diameter greater than 2.5 mm.	3	Protection against spraying water	Water dripping at an angle of 60° to the vertical from any direction must cause no damage.
4	Protection against granular foreign objects	Protection against contact between live or internal moving parts and tools, wires and the like with a thickness greater than 1 mm. Protection against ingress of solid foreign objects with a diameter greater than 1 mm.	4	Protection against splashing water	Water that splashes against the equipment from any direction must cause no damage.
5	Protection against dust deposits	Complete protection against contact with live or internal moving parts, protection against hazardous dust deposits. The ingress of dust is not completely prevented, but dust may not penetrate in such quantities as to impair the function.	5	Protection against water jets	A water jet from a nozzle that is directed against the equipment from any direction must cause no damage.
6	Protection against dust entry	Complete protection against contact with live or internal moving parts. Protection against the ingress of dust.	6	Protection against flooding	Water must not penetrate the equipment in hazardous quantities in cases of temporary flooding, e.g. due to heavy seas.
			7	Protection during temporary immersion	Water must not penetrate the equipment in hazardous quantities if the equipment is immersed in water under the specified conditions of pressure and time (1m for 30 min.).
			8	Protection during continuous immersion	Water must not penetrate the equipment in hazardous quantities if the equipment is immersed in water (at least 2 bar for 2 h for HelaGuard IP68 non-metallic fittings and 5 bar for 5 h for HelaGuard IP68 metallic fittings.)
			9k	Protection against high pressure/steam jet cleaning	Highly pressurised water directed at the enclosure from any direction must cause no damage.